

**REMARKS/ARGUMENTS*****Status of Claims***

Claims 1, 5, 15, and 20-22 are hereby amended.

Claims 17-19, 27 and 35 have been canceled.

Thus, claims 1-16, 20-26 and 28-34 are pending in the application.

Applicant hereby requests further examination and reconsideration of the presently claimed application.

***Substitute Drawings***

A formal drawing of Figure 1 is included with this response.

***Claim Objections***

Claim 5 has been amended to remove the term “about.”

***Claim Rejections – 35 USC § 102***

Claims 1-8 and 35 stand rejected under 35 USC 102(e) as being anticipated by *Dixon* (WO 03/053890 A1). Claims 9-13 stand rejected under 35 USC 102(b) as being anticipated by *Woodard* (WO 99/19280). Claim 35 has been canceled. Applicant has amended independent claim 1 to include the limitations of claims 17-19. Therefore, the anticipation rejections of independent claim 1, as well as claims 2-13 depending from claim 1, have been overcome.

***Claim Rejections – 35 USC § 103***

Claims 14-34 stand rejected under 35 USC 103(a) as being obvious over *Dixon* (WO 03/053890 A1) in view of *Seader et al.*, Perry’s Chemical Engineers’ Handbook, 7<sup>th</sup> Ed. New York, McGraw Hill, 1997, pp. 13-4 – 13-9. As noted previously, the limitations of claims 17-19 have been rolled into independent claim 1, and thus Applicant will address the obviousness of

independent claim 1, and claims 14-16, and 20-26 depending therefrom. Likewise, Applicant will address the obviousness of independent claim 28 and claims 29-34 depending therefrom.

Applicant respectfully submits that the prior art of record does not establish a *prima facie* case of obviousness as to the pending claims. According to MPEP 2142, three basic criteria must be met to establish a *prima facie* case of obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

The Examiner has not met the burden of establishing the *prima facie* case of obviousness because the combination of *Dixon* and *Seader* (assuming such to be proper without conceding same) does not teach or suggest each and every limitation of independent claims 1 and 28. Independent claim 28 recites a system for separating an oligomerization reactor effluent comprising:

- (a) a vapor/liquid separator to flash the oligomerization reactor effluent into a vapor portion and a liquid portion; and
- (b) a distillation column in fluid communication with the vapor/liquid separator, wherein the distillation column has a side draw for withdrawing an oligomerization product stream and receives as separate feeds the vapor portion and the liquid portion from the vapor/liquid separator.

Independent claim 1 contains similar elements (a) – (d) recited as a method.

Referring to paragraph 32 of the Office Action which relates to independent claim 28, the Examiner relies upon Figure 13-7a of *Seader* as teaching element (a) of claim 28 and further relies upon Figure 13-6b of *Seader* as teaching element (b) of claim 28. Thus, by relying upon Figure 13-7a and Figure 13-6b, the Office Action makes clear and acknowledges that the well-known difference between a flash separator as recited in element (a) and a distillation column as recited in element (b) is understood. However, the Examiner's proposed combination of Figures 13-7a and 13-6b of *Seader* does not teach or suggest each and every element of claim 28.

In order to clearly show the difference, Applicant submits herewith Appendix A, which hypothetically shows the Examiner's proposed combination of the flash drum of Figure 13-7a with the Petlyuk distillation towers of Figure 13-6b. As can clearly be seen, there are two streams exiting the flash drum, namely an overhead vapor stream and a bottom liquid stream. These two separate streams are clearly recited in element (a) of claim 28 and likewise element (a) of claim 1. Furthermore, claims 1 and 28 each recite that the overhead vapor stream and bottom liquid stream from the flash drum are fed to a distillation column having a side draw. As shown by the attached Appendix A, the Examiner's proposed combination at most provides for a single feed to the prefractionator of the Petlyuk distillation towers and does not teach or suggest feeding both streams from the flash drum to the prefractionator of the Petlyuk distillation towers. This single feed might be the overhead vapor stream from the flash drum or the bottom liquid stream from the flash drum but not both. Furthermore, the prefractionator of the Petlyuk distillation towers does not allow for "withdrawing an oligomerization product stream from a side drawn outlet . . ." as stipulated within element (d) of claim 1 and element (b) of claim 28. Thus, the combination of Figures 13-7a and 13-6b does not teach or suggest each and every element as recited in independent claims 1 and 28.

Assuming for the sake of argument (and without conceding such to be proper) that the Examiner is proposing replacing the prefractionator (i.e., first column) of Fig. 13-6(b) with the flash drum of Fig. 13-7(a), such is only accomplished via the impermissible use of hindsight in view of Applicant's disclosure. According to MPEP § 2142, hindsight reconstruction of the prior art based on the Applicant's disclosure is impermissible, and the legal conclusion must be reached on the facts gleaned from the prior art.

Applicant respectfully submits that any modification to eliminate the prefractionator would impermissibly destroy the fundamental operability of the Petlyuk distillation towers configuration. As stated on page 13-5 of *Seader* (emphasis added):

The thermally coupled system in Fig. 13-6b, discussed by Stupin and Lockhart [citation omitted] and referred to as Petlyuk towers, is particularly useful for reducing energy requirements when the initial feed contains close-boiling species. ... Only the second column is provided with condenser and reboiler; reflux and boil-up for the prefractionator are obtained from the second column.

Thus, it is fundamental to the operability of the Petlyuk distillation towers that the two distillation columns be thermally coupled by returning liquid from column 2 as an overhead condenser to the prefractionator (i.e., column 1) and returning vapor from column 2 as a bottoms reboiler to the prefractionator. Any attempt to eliminate the return of the liquid and vapor streams from column 2 to the prefractionator would impermissibly destroy the fundamental thermal coupling required in the Petlyuk distillation towers, thereby rendering the Petlyuk distillation towers inoperable for their intended purpose, which is prohibited by MPEP § 2143.01(V). Furthermore, as noted previously, the only way it becomes known to make such a modification is upon reading Applicant's own disclosure, which requires the impermissible use of hindsight. Accordingly, Applicant respectfully

submits that independent claims 1 and 28, and all remaining claims depending therefrom, are patentable over the prior art of record.

## CONCLUSION

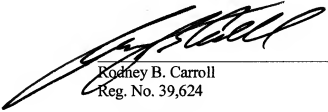
Consideration of the foregoing amendments and remarks, reconsideration of the application, and withdrawal of the rejections and objections are respectfully requested by Applicant. No new matter is introduced by way of the amendment. It is believed that each ground of rejection raised in the Office Action dated January 26, 2007 has been fully addressed. If any fee is due as a result of the filing of this paper, please appropriately charge such fee to Deposit Account Number 50-1515, Conley Rose, P.C. If a petition for extension of time is necessary in order for this paper to be deemed timely filed, please consider this a petition therefore.

If a telephone conference would facilitate the resolution of any issue or expedite the prosecution of the application, the Examiner is invited to telephone the undersigned at the telephone number given below.

Respectfully submitted,

Date: \_\_\_\_\_

5-16-07



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# Appendix A

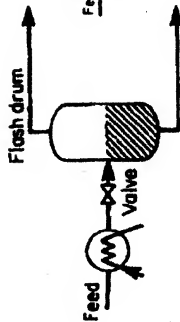


Fig. 13-7(a)

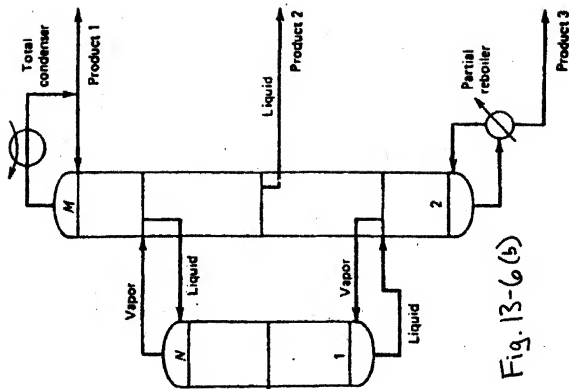


Fig. 13-6(b)